China Classification Society (CCS)

Witness Report

of Land-based Testing for Seascape®-250-BWMS

China Classification Society (CCS) has received the type approval application for Seascape® ballast water management system (Type: Seascape®-250-BWMS) from Elite Marine Ballast Water Treatment System Corp. on behalf of the competent authority of PRC government. We intend to assess the documents requested in the land based testing and filed witness the test cycle and experimental process. And also confirm the validation of the land based test.

1. Documents

Before the start of land-based testing. CCS had received the relevant documents submitted by Elite Marine Ballast Water Treatment System Corp. according to the requirements in 1.5 and 2.1 annex of G8 guideline. It includes but not limited to the following contents:

1.1 Quality Management Plan for land-based test (QMP)
1.2 Quality Assurance Project Plan for land-based test (QAPP)
1.3 Standard Operational procedure for land-based test (SOP)
1.4 Seascape®-250-BWMS System Description
1.5 Seascape®-250-BWMS O & M Manual

After the assessment, these documents comply with the G8 guideline with abundant contents. And the condition of the land based test is satisfied.

2. Drawings of the Land-based Testing

Before the start of land-based test, CCS had received the relevant drawings and descriptive documents such as the P & ID. Site Layout and O&M manual with abundant contents submitted by Elite Marine Ballast Water Treatment System Corp. according to the requirements in 1.5 annex of G8 guideline.
2.1 Seascape®-250-BWMS P & ID
2.2 Seascape®-250-BWMS Site Layout
2.3 Seascape®-250-BWMS System Layout

3. Witness Site of the Land-based Testing

On the floating dock of COSCO (Dalian) Shipyard, 3 members from the CCS visited the site of land based testing to assess the ambient environment. We confirmed that it was complied with the description in QAPP and best outline.

The discharge of the experiment was permitted by the local environmental agency.

4. Witness the Facilities of the land based test

On the floating dock of COSCO (Dalian) Shipyard , the subject facilities of the land based testing were also investigated, the result of which is they all complying with the description in QAPP and test plan.

4.1 There were 26 ballast tanks in total on the floating dock, among which 20 tanks were used as the test tanks, and the the maximum capacity was 3328m^3,and the minimum is 1795m^3 . There were ten cycles in the test, and for each cycle two tanks were adopted as treated tank and control tank respectively with the same capacity and symmetricaldistribution .

4.2 The ballast pump flow of the subject system is 250m^3/h complying with the relevant requirements.

4.3 The installation of the subject equipment complies with the requirements of 2.3.9 annex in G8 guideline and relative drawing. The commissioning of the system is finished before the test by qualified operator.

4.4 The area for sampling analyzing onshore is COSCO (Dalian) Shipyard. The analyzer equipment is well prepared according to the experimental plan.

4.5 Safety measures are made in the test field.

4.6 Sampling points and sampling device is prepared as the requirement of 2.3.12 annex in G8 guideline.

4.7 Cleaning facilities are well prepared complying with the description of QAPP.

5. Test Party:

The First Institute of Oceanography, SOA is responsible for the sampling and sample analysis task of the land-based testing. The institute and sample tester are qualified. The measures of control assurance and resource are enough.

6. Time of the Land-based testing

The land based testing lasted from March 17thto March 27th, 2012

7. Witness the Test Cycles of the Land-based Testing

We have witnessed the whole process of the 10 test cycles in the land based test including raw water equalization, ballast, de-ballast, sampling and sample analyzing etc.

7.1 The land based test of Seascape®-250-BWMS indeed has ten valid test cycles with two different salinity water series complying with the requirements in 2.3.1&2.3.17 annex of G8 guideline.

7.2 The influent of the ten test cycles is confirmed to meet the requirements of 2.3.17,

2.3.18, 2.3.19, 2.3.20 annex in G8 and the description in QAPP.

7.3 The cleaning process preventing cross infection in each test cycle comply with the description in QAPP. The operation meets the 2.3.11 annex of G8 guideline.

7.4 The field inspecting and monitoring of the operation parameters in 10 test cycle is confirmed complying with the 2.3.24 annex of G8 guideline and the description in QAPP.

7.5 The storage condition and time for treated and control water comply with the 2.3.1, 2.3.2 annex of G8 guideline and the description in QAPP.

7.6 Ten test cycles are true and valid complying with the G8 guideline and the description in QAPP.

7.7 The sampling point and time of ballast and treated water is confirmed complying with the 2.3.21,

2.3.23,2.3.25,2.3.26,2.3.28,2.3.29,2.3.30,2.3.31,2.3.32,2.3.33,2.3.34,2.3.35,2.3.36 annex of G8 guideline and the description in QAPP.

7.8 Labels of the sample are valid, complying with the description in QAPP.

7.9 Sampling records of the field is valid and comply with the description in QAPP.

7.10 The operation parameter is valid and complies with the description in QAPP.

7.11 Sample analyzing and equipment operation is confirmed valid and complying with the description in QAPP.

7.12 The storage, treatment and analyzing of the sample is confirmed complying with the G8 guideline and the description in QAPP.

7.13 The sample is confirmed to be treated within the time prescribed.

8. Land-based Test Report

Formal land-based testing report and records were received by CCS after the completion of the land-based testing. After the review, the report describes the testing process and results in a clear way with completed original records and accurate analytical results. It is valid and complying with the requirements of G8 guideline.

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C0 August 21, 2012